

Mobile Technology and Relationships with Caring Adults

Honors Undergraduate Thesis

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Abstract

Positive youth development (PYD) is based on the notion that all adolescents have strengths that exist within their developmental system. One PYD strategy involves developing strengths within the various social systems (such as the family or school) that support adolescents. Strong relationships among youth and positive caring adults have been identified as important strengths in the field of PYD and within relational-cultural theory (Anderson-Butcher & Cash, 2011; Spencer et al., 2004; Lewin-Bizan, 2010). While significant research has been done looking at the value of relationships with caring adults, little research has examined how mobile technology plays a role in the development, nurturance, and maintenance of these relationships. One type of mobile technology used by adolescents is the cell phone. Cell phones are unique in that they allow for ongoing and instant interactions among adolescents and their social systems. Cell phone use is also increasingly common among adolescents (Lenhart, A., Ling, Cambell, & Purcell, 2010). Given the increasing relevance of mobile technology, the purpose of this study is to understand how cell phones are used by adolescents, in general, as well as in their relationships with caring adults. The study also examines the how adolescents' relationships with caring adults and their cell phone interactions relate to adolescent scores of self-esteem and social competence.

Chapter 1: Introduction

Approximately 72.3 million people in the United States are under the age of 18 (U.S. Census Bureau, 2000). Many adolescents engage in risky behaviors throughout their adolescent years (Center for Disease Control, CDC, 2009). Risky behaviors may include: alcohol and tobacco use, unhealthy eating habits, unprotected sexual behaviors, and violent actions or bullying (CDC, 2009). The risk and resilience framework is helpful for examining factors which may increase or decrease the likelihood of adolescents engaging in risky behaviors (Fraser, Richman, & Galinsky, 1999).

Risk factors are individual, school, family, or community factors that increase the probability of adolescents engaging in negative behaviors (Fraser et al., 1999; Engle, Castle, & Mennon, 1996). However, despite the presence of multiple risk factors, some adolescents transition into adulthood smoothly, with the assistance of protective factors. Similar to risk factors, protective factors occur in different systems such as the individual or community. Protective factors serve to decrease the likelihood of problem behaviors occurring by nullifying the impact of risk (Anderson-Butcher & Cash, 2010). One protective factor identified in the literature involves adolescents having positive relationships with caring adults.

Relational-cultural theory emphasizes the importance of growth-fostering relationships, including those among adolescents and caring adults, on psychological health (Spencer, Jordan, & Sazama, 2004). More specifically, supportive relationships among adolescents and non-parental adults are seen as protective factors which contribute to positive adolescent development. Supportive relationships are defined as interactions between people which are characterized by respect, mutuality, empathy, and authenticity (Spencer et al., 2004).

Studies completed by Werner (1992) and Eccles and Gootman (2002) found that adolescents who developed relationships with non-parental adults had increased positive outcomes. These relationships may be formal, such as in mentoring programs such as Big Brothers Big Sisters, or informal, such as communications between adolescents and teachers or coaches (DuBois & Neville, 1997; Ragins & Collins, 1999). These relationships have been found to increase adolescents' self-esteem, social competence, and cognitive skills (Ragins & Collins, 1999; Anderson-Butcher, Cash, Saltzburg, Midle, & Pace, 2004).

Whether it is through more formal mentoring programs or informal caring adult relationships, mobile technology is one way in which relationships among adolescents and caring adults may be developed. Cell phones are a commonly used form of mobile technology, particularly by adolescents. In fact, the number of 12 to 17 year olds who own cell phones has risen from 45% in 2004 to around 75% in 2010 (Lenhart, A., Ling, R., Cambell, S., & Purcell, K., 2010). Among teens, text messaging has become the most common form of interaction with friends (Lenhart et al., 2010). In addition, 88% of adolescents who have cell phones use text messaging (Lenhart et al., 2010). Essentially, cell phones allow adolescents to quickly connect with their social systems and further develop and nurture their relationships.

Although adolescents use mobile technology frequently, little research has been done to examine the role of mobile technology in the development and nurturance of relationships with others (Lenhart et al, 2010). Furthermore, to the author's current knowledge, no articles or studies have examined the role of mobile technology in fostering relationships among adolescents and caring adults. Indeed, in an increasingly technological society, cell phones may play a significant role in the development and maintenance of adolescents' relationships.

This study aims to examine the role that mobile technology plays in adolescents' relationships with caring adults, as well as to explore how adolescents' relationships with caring adults and their cell phone interactions relate to adolescent scores of self-esteem and social competence.

Chapter 2: Literature Review

Adolescents Today

Approximately 26% of the United States population is comprised of adolescents under the age of 18, representing 72.3 million people (U.S. Census Bureau, 2000). Many adolescents today are struggling, evident from research examining the prevalence and incidence of risky behaviors.

The most widely used source to look at adolescent trends relating to health-risk behaviors is the National Youth Risk Behavior Survey (YRBSS; CDC, 2009). The YRBSS examines behaviors that contribute to unintentional injuries and violence, tobacco use, alcohol and other drug use, sexual behaviors, unhealthy dietary behaviors, and physical inactivity among adolescents in grades 9-12 (CDC, 2009). YRBSS results found that many adolescents in the U.S. have engaged in risky behaviors such as smoking (19.5%) and drinking (41.8%) within the last month (CDC, 2009). In addition, 13.8% of adolescents had sexual intercourse with four or more people during their lifetime (CDC, 2009). Table 1 lists a number of the results from the 2009 YRBSS.

As evident in Table 1, many adolescents today engage in multiple types of problem behaviors. A growing body of research points to important qualities and characteristics present within adolescents' lives which are critical to reducing the likelihood of engaging in problem behaviors. These qualities and characteristics support PYD and prevent the engagement in risk taking behaviors. A risk and resilience framework is useful for understanding the factors that lead adolescents to engage in risky behaviors (Fraser et al., 1999).

Risk and Resilience

Burt, Resnick, and Novick (1998) and Fraser et al. (1999) proposed a risk framework which is useful when exploring adolescent risk behaviors. The framework identifies four risk stages beginning with antecedents, which are risks that are inherently present in adolescents' lives. These antecedents may be present at the community level (such as violence, gang problems and poverty) or the family level (such as single-parent families, poverty and transiency). Antecedents frequently lead to system markers which are documented by authorities and are early and measurable signs of difficulties. System markers are predictors of problem behaviors and include actions leading to negative consequences such as violence or unprotected sexual activity. These problem behaviors lead to further negative outcomes which inhibit adolescents from positive development. Negative outcomes may include dropping out of school or running away from home.

Others have followed with this line of inquiry. Engle, Castle, and Menon (1996) defined risk factors as "individual or environmental hazards that increase children's vulnerability to negative developmental outcomes" (p. 621). Risks include individual level characteristics such as low birth weight or physical or mental disability; family factors such as poverty, marital disruption, chronic family conflict and child abuse; and community level factors such as living in a high-crime neighborhood, going to an inadequate school, or prevalent racism, sexism, or other discriminatory practices (Engle et al., 1996; Fraser et al, 1999). Additional school risk factors exist and include academic failure, peer rejection, early problem behaviors, early onset of drug use and inability to take cues from others (Fraser et al., 1999).

Even when children are exposed to risks, some adolescents still transition successfully into adulthood. This can be understood by exploring protective factors that combat the influence of risks on adolescent development. Protective factors are characteristics or conditions which decrease the likelihood of problem behaviors occurring (Anderson-Butcher & Cash, 2010). Similar to risk factors, protective factors are found at various system levels. Examples include: individual characteristics such as an easy going temperament; family factors such as parental warmth and supervision; and community conditions such as having a supportive network of friends or regular attendance at a place of worship (Fraser et al., 1999; Anderson-Butcher & Cash, 2010). Additional school protective factors exist such as peer acceptance, regular school attendance, and academic success (Anderson-Butcher & Cash, 2010).

The risk and resilience framework underlies PYD, which is based on the notion that all adolescents have strengths that exist in their developmental system and have the ability to change the course of their development (Lewin-Bizan, Bowers, & Lerner, 2010). PYD also considers that there are strengths in the adolescents' systems, such as family or positive adult role models such as mentors, which support adolescents' positive development (Lewin-Bizan et al., 2010). Under the risk and resilience and PYD frameworks, the relationship that adolescents have with positive caring adults would be viewed as a protective factor.

At the core of several identified risk and protective factors are relationships, or the lack thereof. For example, relationships with caring adults are viewed as important parts of adolescents' social systems. These relationships may take place at school, in the family, or in the community (Engle et al., 1996; Fraser et al., 1999). Relational-cultural theory provides guidance for understanding how relationships are formed and help support PYD.

Theoretical Framework

Relational-cultural theory is based on empirical research examining the importance of growth-fostering relationships on psychological health (Spencer, Jordan, & Sazama, 2004). Supportive relationships among adolescents and non-parental adults are defined by theory as relationships characterized by respect, mutuality, empathy, and authenticity (Munson et al., 2010). According to relational-cultural theory, respect and mutuality include being open and accepting of others' experiences, as well as involve the presence of active participation by both parties (Spencer et al., 2004). Empathy includes the ability to understand other peoples' feelings and express understanding. Finally, authenticity is described by the ability of people to feel comfortable being themselves in their relationships (Munson et al., 2010). The combination of these four relationship characteristics contributes to the creation of growth-fostering relationships among adolescents and non-parental adults.

Relational-cultural theory provides a helpful framework for examining relationships between adolescents and caring adults. The theory emphasizes the importance of growth-fostering relationships and their value for promoting psychological health (Spencer, et al., 2004). When applying the theory to relationships among adolescents and caring adults, research has described the positive psychological benefits to adolescents stemming from these relationships (Spencer, et al., 2004; Anderson-Butcher & Cash, 2010; Eccles & Gootman, 2002; Bleachman, 1992). Relational-cultural theory, when applied to relationships among adolescents and non-parental adults, helps to explain the positive psychological benefits found by research on adolescents and relationships with caring adults (Spencer et al., 2004; Liang et al., 2010; Anderson-Butcher & Cash, 2010; Werner, 1992; Eccles & Gootman, 2002).

Relationships with Caring Adults

One area of study that is increasingly being explored involves the examination of relationships with caring adults as a protective factor. The research has found that adolescents who have developed relationships with caring adults have increased positive outcomes such as enhanced self-esteem and pro-social attitudes (Eccles & Gootman, 2002; Anderson-Butcher, Cash, Saltzburg, Midle, & Pace, 2004). In addition, relationships with caring adults also may decrease risk factors such as internalizing and externalizing behaviors (Hurd, Zimmerman, & Xue, 2009).

For example, research conducted by Hurd et al. (2009) examined the role that non-parental adults play in adolescent development. The study aimed to see the impact of exposure to negative non-parental adult behavior and the possible positive effects of non-parental role model. The researchers found that adolescents who were exposed to negative non-parental influences (such as knowing an adult who uses drugs or dropped out of school or owned weapons) scored highly on scales of internalizing, externalizing, and substance abuse behaviors. Non-parental role models were found to have protective effects on internalizing and externalizing behaviors (Hurd et al., 2009).

Similarly, a long term study done by Werner (1992) looked at the protective impact of non-parental adult relationships on adolescents. The study found that adolescents who formed relationships with non-parental adults, such as grandparents, teachers or youth leaders, were more likely to display positive developmental outcomes than adolescents who did not have such relationships.

Examining the impact of larger scaled community programs on youth development, Eccles & Gootman (2002) found that the presence caring relationships affects whether or not adolescents thrive. They found eight characteristics of positive developmental settings which were: physical and psychological safety, appropriate structure, supportive relationships, opportunities to belong, positive social norms, supports for efficacy and maturing, opportunities for skill building, and integration of family, school and community efforts. Looking specifically at the quality of supportive relationships, positive relationships with caring adults is characterized by adults exhibiting qualities of both emotional and instrumental support. In particular, adolescents' *perceptions* of adult qualities are more important than the actual qualities possessed by adults.

Others have explored more formal relationships, such as those within mentoring PYD programs. In Big Brothers/Big Sisters programs, mentor relationships that were youth-centered resulted in positive adolescent outcomes (Anderson-Butcher et al., 2004). Caring adults provide “an environment of reinforcement, good modeling, and constructive feedback for physical, intellectual, psychological, and social growth” (Eccles & Gootman, 2002, p. 96). Adolescents who communicate with caring adults other than their parents, such as coaches, neighbors, or teachers, would be expected to have more positive developmental outcomes than those who do not have caring adults other than their parents in their lives.

The importance of caring adults has been examined in other formal PYD settings and organizations. Anderson-Butcher et al. (2004) studied supportive staff-youth relationships in Boys and Girls Clubs of America and their impact on pro-social and anti-social school related attitudes and behaviors. One of the benefits of developing relationships with caring adults is that adolescents' social capital increases as they are provided with access to previously unavailable

resources, support for their goals (personal, academic, career), assistance in academic success, psychological and emotional support, as well as enhanced self-esteem and pro-social attitudes. The research results suggest that supportive staff-youth relationships lead to increased pro-social attitudes and behaviors at school which lead to academic achievement. In addition, supportive staff-youth relationships decreased the likelihood of adolescents engaging in anti-social behaviors.

One way that adolescent relationships have been studied is by examining communication patterns. The way in which adolescents and caring adults communicate plays an important role in determining the benefits of the relationship. Dickerson & Crase (2005) define positive communication as that which includes active listening, empathy, and respect. In addition, “through open communication, individuals are able to understand others’ needs, provide support, and prevent misunderstandings” (Dickerson & Crase, p. 46). Adolescents who engaged in open communication displayed appropriate behaviors and had a greater ability to deal with stress than those who did not. In addition they found that a “strong bond between parents and adolescents provides a more secure environment, allowing adolescents to explore their increasing freedom and continue to be supported via the bond of attachment to their parents” (Dickerson & Crase, 2005, p. 47). This might also be true of the relationships between caring adults and adolescents. Adolescents who engage in open communication with caring adults (other than parents) would likely feel more secure and display more positive behaviors and handle stress appropriately because they have experienced adults to turn to for advice and support (Eccles & Gootman, 2002). One way that caring adults offer support and promote the adolescent’s positive development is through mentoring.

Mentoring

Mentoring is defined as a “one-to-one relationship between a youth and a caring adult who assists the youth in meeting academic, social, career or personal goals” (DuBois, & Neville, 1997, p. 227) The support and guidance from influential adults has been found to be critical for adolescents’ transition into adulthood and such support and guidance may be found in mentoring relationships (Georgiou, Demetriou, & Stavrinides, 2008). Mentoring relationships have been found to improve adolescents’ chances of success at school as well as enhance emotional adjustment (Bleechman, 1992; Georgiou et al., 2008). A mentor that provides the adolescent with a positive adult role model will allow the adolescent to develop positive images of adults and may lead to improvements in communication skills and self-esteem. Mentoring relationships also enhance the mentee’s self-efficacy and sense of competence and are a result of the quality of the interpersonal relationship and the strength of the emotional bond between mentor and mentee (Ragins & Collins, 1999).

Mentors, or caring adults, serve many roles for adolescents including: role model, coach, counselor, advocate, and friend (Anderson-Butcher et al., 2004). In addition, mentors have many responsibilities including: “fortifying developmental competencies; strengthening relational capacities; providing opportunities for intellectual stimulation and growth; expanding social, recreational, and resource horizons; and instilling the hope and promise of goals and aspirations” (Anderson-Butcher et al., 2004, p. 93). Together the roles and responsibilities of a mentor “enhance self-esteem, self-worth, and self-recognition, thereby promoting the well-being of youths” (Anderson-Butcher et al., 2004, p. 93).

Similar to other relationships, mentoring relationships are composed of different interconnected processes which serve to develop and nurture relationships. In a study conducted by Rhodes, Spencer, Keller, Liang, and Noam (2006), it was found that mentoring affects

adolescents through three interrelated processes: “1. By enhancing youth’s social relationships and emotional well-being, 2. By improving their cognitive skills through instruction and conversation, and 3. By promoting positive identity development through serving as role models and advocates” (p. 692).

Based on Rhodes et al. (2006), adolescents’ social connections are positively affected by the presence of relationships with caring adults. Mentoring relationships provide and enhance adolescents’ social relationships and emotional well-being by providing opportunities for fun, assisting with emotional regulation, offering care and support, providing examples of positive relationship with adults, helping to express and regulate positive/negative relationships, and helping mentees to relate better with others.

Similarly, cognitive skills are improved through mentoring relationships as mentees are provided with exposure to new activities and intellectual challenges. For example, an adolescent in the inner city may have a mentor who takes them to a science or art museum, to engage and strengthen their relationship, and provide intellectual stimulation. Adolescents also may be exposed to different cultures, religions, or ethnicities through their interactions with mentors.

Finally, positive identity development is provided by the relationship through positive praise. This praise can be incorporated into an adolescent’s sense of self and affect their perception of the future. Additionally, adolescents with mentors have been found to have “improvements in adolescent’s perceptions of their parental relationships, including levels of intimacy, communication and trust. These improvements, in turn, predicted positive changes in a wide array of areas, such as the adolescent’s sense of self-worth, scholastic competence and academic achievement” (Rhodes et al., p. 699).

Other research also supports the value of these relationships. Multiple researchers have examined relationships among adolescents and caring adults and found evidence supporting adults serving as a protective factor (Eccles & Gootman, 2002; Anderson-Butcher & Cash, 2010; Werner, 1992; and Rhodes et al., 2006). These mentoring relationships may take place in a structured setting, such as in a program format similar to Big Brothers Big Sisters, or in a less structured form, such as during an interaction between an adolescent and their teacher or adult neighbor. Regardless, the goal of a mentoring program is to decrease the exposure adolescents have to risk factors in order to prevent negative consequences (Barron-McKeageny, Woody, & D'Souza, 2001). The mentoring process may take place through a formal or informal process.

Formal.

Typically, formal mentoring programs are set up by an organization and are characterized by structure, contracted meeting times, and guidance and assistance is provided by the organization throughout the process. Formal relationships typically last for six months to one year and tend to be shorter in duration than informal mentoring. These are a few examples of the benefits that formal mentoring programs have found to have on adolescents.

A study conducted by DuBois, & Neville (1997) examined the benefits of participation in a Big Brothers/Sisters program. The study utilized a questionnaire which measured amount of mentor-youth contact, subjective feelings of closeness toward youth, obstacles in relationship, frequency of which mentor and youth discussed various topics and engaged in different types of activities. 82.6% of adolescents reported that they felt they received “moderate” or “great” benefits from the relationship. In addition, more extensive amounts of mentor-youth contact and feelings of emotional closeness were linked to higher ratings of perceived youth benefits.

Across Ages is a “mentoring program designed to reduce drug abuse among “at risk” youth and to improve the lives of older adults (55+) in poor, urban communities” (Taylor, A.S., LoSciuto, L., Fox, M., Hilbert, S.M., & Sonkowsky, M., 1999, p. 78). Mentors work as advocates, friends, and role models to help adolescents develop self-confidence and life skills to help them resist drugs and learn to deal with challenges they will meet in life by increasing adolescent’s knowledge of health/substance abuse issues; fostering healthy attitudes and behaviors; improving school attendance, academic achievement and in-school behavior; and increasing problem solving skills and self-worth. Mentors and mentees worked together on homework or class projects, attended sporting or cultural events, and participated in community service activities. Mentors who nurtured, coached, encouraged, engaged in collaborative problem-solving, and helped adolescents set realistic attainable goals supported overall adolescents’ satisfaction and success. The study found that adolescents developed more pro-social attitudes towards school, elders and their future; developed more positive attitudes about community service; developed more healthy reactions to situations involving drug use; and experienced an improved sense of well being.

Clearly, formal mentoring programs have been shown to enhance adolescents self-esteem, self-efficacy, emotional well-being, cognitive skills, and positive identity development (Anderson-Butcher et al., 2004; Rhodes et al., 2006). Additionally, there are more informal mentoring relationships which exist between adolescents and caring adults that have also been studied.

Informal.

Informal mentoring takes place between an adolescent and a caring adult, who may be a teacher, coach, neighbor, or other adult who provides support and assistance to the adolescent. Unlike formal mentoring, there is no set schedule of meeting times or planned events; communication times and interactions are left entirely up to the mentor and mentee. This provides the pair with flexibility but scheduling conflicts could mean that the pair is unable to meet as frequently. A benefit of informal mentoring is that the mentor and mentee already have an established relationship and are intrinsically motivated. Informal mentoring relationships are formed spontaneously and typically last longer than formal mentoring relationships (Ragins, & Cotton, 1999). Since in an informal mentoring relationship the mentor and mentee mutually identify one another, it is “reasonable to expect that the psychosocial functions of role modeling, friendship, and counseling may be less in formal than informal mentoring relationships” (Ragins, & Cotton, 1999, p. 540).

A study done by Ragins and Cotton (1999) examined the mentoring functions received by mentees in formal and informal mentoring relationships and the mentee’s career outcomes associated with the relationship. The study found that mentees in informal mentoring relationships reported that their mentors provided them with more career development and psychosocial functions than mentees with formal mentors. In addition, mentees with informal mentors reported having a greater satisfaction with their mentors than mentees in formal mentoring relationships.

In a study conducted by Brown (2005), the use of an informal mentoring program in a preschool was examined. Kermit Cove is a preschool for children ages three to four and their mission is to help children develop: “(a) a positive self-concept, (b) an attitude toward learning independence and personal initiative, (c) curiosity about the world, (d) positive social skills, and

(e) respect for one's rights, as well as the rights of others" (p. 221). The program utilizes high school students as mentors for the preschoolers. Parents of the children enrolled reported that the assistance provided by the high school students has led to improved communication and social behaviors such as playing with other peers and trusting other adults; improved pre-academic skill development such as speech and letter recognition; as well as developed and enriched their child's fine/gross motor development, readiness skills, and social skill development. One parent noted that an extended friendship between her daughter and her high school mentor developed through participation in the program and the friendship continued even after the program ended.

Furthermore, Karcher (2005) conducted a study which looked at developmental mentoring, in which high school students are paired with an elementary school mentee. The main goal was to focus on developing the mentor-mentee relationship as well as to help develop self-esteem, connectedness, identity, and academic attitudes. The study found that after 6 months of mentoring, the mentees had positive gains in connectedness to parents and to school. The study also found that mentors' attendance was positively correlated to mentee gains in social skills, self management, and feelings of self-esteem.

One relatively newer area of study among adolescents is the impact of mobile technology on relationships. Mobile technology use is prevalent among this youth this age, as it opens up entirely new ways for adolescents to communicate with others and build relationships (Lenhart et al., 2010). Mobile technologies allow for additional ways in which adolescents may communicate with positive caring adults, and in turn add to the positive benefits of caring adult relationships.

Technology

One method of communication that is central to adolescents today is mobile technology. The number of 12 to 17 year olds who own cell phones has risen from 45% in 2004 to around 75% in 2010 (Lenhart et al., 2010). Among adolescents, text messaging has become the most common form of interaction with friends and 88% of adolescents who have cell phones use text messaging (Lenhart et al., 2010). Cell phones are used by adolescents in a multitude of ways; Lenhart et al. (2010) found that adolescents also use their cell phones to: take pictures (83%), play music (60%), record video (54%), play games (46%), use the internet (27%), and use social networking sites (23%).

In the last four years, text messaging is the form of communication that has grown the most, surpassing face-to-face communication, email, instant messaging, and voice calling to become the go-to method for teens to communicate (Lenhart et al., 2010). As mobile phones become more integrated into adolescents' lives, it is important to identify the costs and benefits of the widespread use of mobile phones and text messaging. Mobile phones offer many benefits such as increased control, socialization, connectivity, and status. However, there are some serious consequences related to mobile phone use have been identified including; sexting, cyberbullying, distracted driving and cell phone dependency.

One benefit of text messaging is that it serves as an easy way for adolescents to communicate with their social systems (Lenhart et al, 2010). A study found that of adolescents who text, 81% text their friends at least once every day and 50% text their parents at least once a day (Lenhart et al., 2010). When adolescents were asked why they send or receive text messages, 95% responded "just to chat or say hello"; 89% use it to report their location or ask others about their location; and 75% use texting to exchange information privately (Lenhart et al., 2010). Some gender differences were found when asking teens why they used text messaging; 59% of

girls report texting “just to chat or say hello” several times a day compared with 42% of boys (Lenhart et al., 2010). Additionally, 84% of girls use texting to have long discussions on personal matters compared with 67% of boys (Lenhart et al., 2010).

Adolescents also reported using text messaging more frequently in situations where it would be socially awkward to conduct a voice call, such as in a movie theater or in other public settings (Lenhart et al., 2010). When asked their overall views on cell phones, 93% of teens reported they feel safer because they could always use their cell phone to get help; 92% reported they use their cell phone to keep in touch, no matter their location; and 84% reported they liked that their cell phone made it easy to make and change plans quickly (Lenhart et al., 2010).

Since text messaging and mobile technology have become more popular in recent years, there is limited research examining the relationship between adolescents’ relationships with caring adults and the role the mobile technology plays in these relationships.

Mentoring and Technology. Some initial research has been conducted regarding family and mobile phone use and how families use mobile phones to communicate. One study by Williams & Williams (2005) examined the use of mobile phones in parent-adolescent negotiations through qualitative interviews with parents and adolescents. The study found that almost all of parents set curfews and limitations on where their children could go but that there was increased flexibility in limits when the adolescent had a mobile phone (Williams & Williams, 2005). Many adolescents reported that they would have more or stricter curfews if they did not have a mobile phone and that having a mobile phone allowed them increased autonomy while also allowing their parents to have instant contact with them if needed. Adolescents viewed texting with their parents more positively than engaging in a direct phone call (Williams & Williams, 2005).

A study by Devitt & Roker (2009) also used qualitative interviews with families to look at how families use mobile phones as well as the concerns and benefits related to mobile phones. The study found that mobile phones were a key feature for families to keep in touch and were seen as a quick and easy way for adolescents and parents to communicate. Researchers found that mobile phones were typically used in families to make plans and to negotiate activities (Devitt & Roker, 2009). While few participants reported that they used their phones to socialize with their parents, some reported that they use mobile phones to talk about more sensitive issues with parents. Sending a text message served as a way to “break the ice” about a difficult to approach topic before having a face to face discussion with a parent. The main benefits of mobile phones reported by adolescents were convenience, the ability to quickly negotiate plans with parents and an increased flexibility in their social lives (Devitt & Roker, 2009). A total of 21.8% of all calls/texts made by teens in an average week were to parents and 27.9% of all calls/texts received by teens were from parents (Devitt & Roker, 2009).

Many parents saw the mobile phone as an “essential tool in their relationship” and identified easy communication with their child as a key benefit of mobile phones (Devitt & Roker, 2009, p. 198). It would be important to identify if adolescents feel more comfortable using cell phones to discuss sensitive issues with caring adults. Additionally, it would be necessary to determine if adolescents and mentors also see cell phones as an essential tool to their relationship.

Research examining relationships between adolescents and their parents have found that cell phones are a common form of communication (Devitt & Roker, 2009; Williams & Williams, 2005). According to a large-scale research study conducted by Pew Research Center, 48% of adolescents report texting their parents or guardians at least once a day, making the cell phone an

integral form of adolescent-parent communication and a way for parents to express parental warmth and monitoring (Lenhart et al., 2010). While no studies have looked at the use of cell phone communications between adolescents and their mentors, since adolescents are apt to text their parents and guardians, it would seem likely that they would also communicate with mentors via cell phone. Additionally, 75% of teens have an unlimited text messaging plan which makes utilizing a cell phone to increase PYD a viable option (Lenhart et al., 2010).

Since cell phones have become an increasingly popular form of communication, it would be important to study how cell phones are utilized in mentoring relationships. Using cell phones to increase communication between mentors and adolescents may improve their relationship through increasing adolescent's positive interactions with adults. Cell phones allow for ongoing interactions between adolescents and their social system and enhance social cohesion (Lenhart et al., 2010). Mentors communicate with adolescents through modeling, instruction, rehearsal, or reinforcement. Reinforcement may be most effective for contributing to PYD because the mentor strengthens performance skills by praising effective communication (Bleechman, 1992). The provision of praise and positive reinforcement from an adult role model may increase adolescent's feelings of self-worth and lead to a more positive identity development.

Summary

Research on PYD and relational-culture theory both identify relationships between adolescents and caring adults as a protective factor that supports adolescent development (Spencer et al., 2004; Lewin-Bizan, 2010). These relationships, whether structured as formal or informal mentoring, have been found to positively impact adolescent development. Benefits include increased self-esteem, enhanced pro-social behaviors, improved stress management,

enhanced school success, as well as improved access to psychological and emotional support (Anderson-Butcher et al., 2004; Bleechman, 1992; Eccles & Gootman, 2002; Dickerson & Crase, 2005; Werner, 1992).

Communications among mentors and adolescents traditionally occurred through face-to-face interactions. However, as the result of 21st century technology advancements, communication between adolescents and caring adults can now take place instantly, regardless of location. Mobile technology has become an increasingly popular form of communication among adolescents, particularly through text messaging (Lenhart et al., 2010). While there has been some initial research on how mobile technology is used within families, there is currently limited information about the use of mobile technology in mentoring relationships (Williams & Williams, 2005; Devitt & Roker, 2009).

This study aims to examine how mobile technology is used in adolescent-caring adult relationships. The purpose is to understand how mobile technology is used among adolescents and caring adults, as well as to explore how adolescents' relationships with caring adults and their cell phone interactions relate to adolescents' self-esteem and social competence. The study intends to fill the gaps in research about mobile technology and mentoring relationships. It is important for research to stay up-to-date with current technology and since cell phone use has become increasingly popular among adolescents, it is pertinent that researchers continue to expand their knowledge of how mobile technology is used and its resultant benefits.

Three primary research questions guided the study:

1. How are cell phones currently used by adolescents?

2. How are adolescents interacting with caring adults, specifically through the use of mobile technology?
3. Is there a relationship between adolescent's mobile technology usage with caring adults and various outcome variables such as self-esteem and social skills?

Chapter 3: Methodology

Procedures

Middle and high school students participating in a school-based afterschool program in Morrow County, OH completed surveys on protective factors and technology as a part of an annual program planning and evaluation process. The survey was filled out by students during the after-school program and took between 15 to 20 minutes to complete. Permission to access these secondary data for research related reasons was granted from the OSU Institutional Review Board.

Participants

A total of 94 students completed the survey. Participants who did not have a cell phone (n=7) were not included in the study, leaving a total of 87 participants for the study. This represents a 92.5% response rate. There was an even distribution of males (50.6%) and females (49.4%) in the sample. The majority of the sample reported their race or ethnicity as White (93.1%), coinciding with the general population of the community where data were collected. Participants were in grades seven through twelve. The majority of participants were in grade ten (36.8%, n=32) and grade nine (24.1%, n=21).

Instrumentation

The independent variables in the study included measures of cell phone usage and the relationship with a caring adult. The dependent variables were self-esteem and social competence.

Cell Phone Usage. A Technology Usage Tool was developed to determine how adolescents use their cell phones and how they specifically use text messaging. Participants were asked if they owned a cell phone, who paid for the cell phone, and what kind of plan they had. Two additional scales within this tool addressed how adolescents used cell phones with caring adults: the cell phone discussion and cell phone conversation quality scales.

Cell Phone Discussion. To understand how participants used technology in their relationship with a caring adult, participants were asked how frequently they talked about various topics using their cell phone with a caring adult. A scale was used that listed 12-items which adolescents might discuss with a caring adult. Topics included “school”, “sports”, “meeting times” and “dating/relationships”. Items were measured with a 5-point Likert scale (1=Never; 3=Sometimes; 5=Very Often).

Cell Phone Conversation Quality. Quality of the conversations that occurred between the participants and their caring adults using a cell phone was measured on a 4-item scale. The scale ($\alpha=.88$) included items regarding the feedback that caring adults provided adolescents during their conversations on cell phones. Items include “adult provides encouragement” and “adult gives you advice”. Items were measured with a 5-point Likert scale (1=Never, 3=Sometimes, 5=Very Often).

General information about how adolescents used their cell phones also was collected from participants. The first scale asked participants the frequency with which they used their cell phone for items such as “access the internet” and “send/receive a picture”. Items were rated on a 5-point Likert scale ranging from (1=Never; 3=Sometimes; 5=Always). Participants overall cell phone usage was the total of all items for frequency of cell phone use.

The second scale asked participants the frequency with which they used text messaging for items such as “discuss important personal matters” and “chat/say hello”. Items were rated on a 5-point Likert scale ranging from (1=Never; 3=Sometimes; 5=Always). Participants overall text message usage was the total of all items for frequency of text message use.

Caring Relationship Scale. This scale was designed to measure the overall strength of the relationship between the adolescent and caring adult. The scale included 5-items regarding the general likelihood of the adolescent to go to a caring adult for assistance ($\alpha=.87$). Items included “advice”, “help to solve a problem”, and “just to say hello/chat”. Items were measured with a 5-point Likert scale (1=Never, 3=Neutral, 5=Very Likely).

Self-Esteem. The Rosenberg Self-Esteem Scale (1979) was used to assess the participants’ overall self-esteem. It is a 10-item scale and items were measured with a 4-point Likert scale (1=Strongly Disagree; 4=Strongly Agree). The scale has been shown to have concurrent, known-groups, predictive and construct validity (see Fischer & Corcoran, 1994).

Social Competence. Social competence was measured by the Perceived Social Competence Scale (PSCS; Anderson-Butcher, Iachini, & Amorose, 2008). This six item scale was used to assess participants’ perception of social competence. Example items include “I respect others” and “I am a good friend”. Items are rated on a 5-point Likert scale ranging from (1=Not at All; 3=Some; 5=Very Much).

Data Analysis

Descriptive statistics were completed for all variables. The means, standard deviations, and frequency of response to Likert-scale items are presented in Tables 2 through 6.

Correlational analyses examined the relationship among the cell phone discussion topics, caring

relationship strength, cell phone conversation quality, the self-esteem, and social competence scales. Finally, two separate sets of linear regressions were completed. The first analyses tested the predictive relationship between the cell phone discussion scale, caring relationship scale, and interaction between cell phone discussion and caring relationship scales with scores of self-esteem and social competence. The second analyses tested the predictive relationship between the cell phone conversation quality scale, caring relationship scale, and the interaction between conversation quality and caring relationship strength with scores of self-esteem and social competence.

Chapter 4: Results

The results are organized into three sections according to each research question.

R.Q. 1: How are cell phones currently used by adolescents?

The majority (89.7%, n=78) of participants had an unlimited plan for their cell phone. Most of the participants had their cell phone bill paid for by their parents (82.8%, n=72). The most common way that respondents reported using their cell phone was to send or receive text messages. Sending and receiving pictures, playing music, accessing the internet, and taking pictures were also commonly reported uses for cell phones. Participants reported that they were least likely to use their cell phone to record or send and receive videos. Detailed data regarding how participants used their cell phones, such as to take pictures or access the internet, are presented in Table 2.

Texting. When asked how frequently participants use their cell phone to send or receive text messages, 73.6% (n=64) of participants “always” text. Participants were most likely to report that they used text messaging to chat or say hello, exchange information privately, and discuss important personal matters. Adolescents reported that they were least likely to use text messaging to discuss school related information. Detailed data for text messaging are located in Table 3.

RQ2: How are adolescents interacting with caring adults, specifically through the use of mobile technology?

Participants were asked if they had a relationship with a caring adult. The majority (92.0%, n=80) of participants reported that they had a relationship with a caring adult. Seven

participants stated that they did not have a relationship with a caring adult. Participants who had a relationship were then asked questions to assess the qualities of the relationship. Participants reported that they were most likely to go to a caring adult for advice, help to solve a problem, and just to chat or say hello. The least common response was that respondents went to a caring adult for school assistance or help to resolve a conflict. Detailed results regarding the likelihood of participants to go to a caring adult for various reasons are presented in Table 4.

Participants were asked about which forms of technology, such as cell phone or email, they used when communicating with caring adults. When asked if they had the caring adult's phone number, 98.8% (n=80) of participants responded "yes". The majority of participants also stated that they had the caring adult's email (60.8%, n=48) and were "friends" on Facebook (73.8%, n=59). Results for the frequency of communication using mobile technology are found in Table 5.

When asked directly to rate their relationship with a caring adult, the majority of respondents responded "very strong" (35.6%, n=31). Other participants responded "strong" (28.7%, n=25) or "neutral" (20.7%, n=18). Very few respondents stated that they had a "weak" or "very weak" relationship, a combination of 5.7% (n=5). Participants were most likely to respond that they usually text a caring adult about friends, family members, and dating or relationships. They were least likely to report that they text a caring adult about arguments, grades, and to discuss their schedule. The detailed results for the cell phone discussion topics are found in Table 6.

RQ 3: Is there a relationship between adolescents' mobile technology usage with caring adults and various outcome variables such as self-esteem and social skills?

Correlation Analyses. To determine if there was a relationship between mobile technology use with caring adults and various outcome variables such as self esteem and social skills, correlations were run. The results of the correlation analyses are presented in Table 7.

Relationship Strength. There was a significant and positive relationship between self-esteem and relationship strength ($r=.52, p<.01$). Similarly, there was a significant and positive relationship between social competence and relationship strength ($r=.38, p<.01$). In contrast, externalizing behaviors were significantly and negatively related to relationship strength ($r=-.37, p<.01$).

Cell Phone Discussion. There was a significant and positive relationship between social competence and cell phone discussion with a caring adult ($r=.23, p<.05$). **Regression Analyses.** To further analyze the results, several linear regressions explored the relationships among the cell phone discussion scale, caring relationship scale, cell phone conversation quality scale, and the dependent variables of self-esteem and social competence. The analyses also explored the interactions among the independent variables and their relationship with each dependent variable. Consistent with the recommendations of Aiken and West (1991), the predictor variables were centered and the interactions terms were formed as the cross-product of the centered variables.

Self Esteem. Two regression analyses were run. The independent variables were the cell phone discussion scale, the caring relationship scale, and the cell phone conversation quality scale. The dependent variable was self-esteem. Results of the regression are outlined in Tables 9 and 11. Specifically, the first omnibus F-test of the regression between cell phone discussion and caring relationship scale, indicated that the model accounted for a statistically significant amount of the variance in self-esteem ($F(3,71)=4.71, p<.05$). The adjusted R^2 value for the model was .14 ($p<.05$), indicating that 14% of the variance in self-esteem was explained

by the independent variable. Caring relationship scale was the only statistically significant predictor of self-esteem ($\beta=.32$, $p<.05$).

The second omnibus F-test of the regression between cell phone conversation quality and caring relationship scales indicated that the model accounted for a statistically significant amount of variance in self-esteem ($F(3,74)=12.97$, $p<.05$). The adjusted R^2 value for the model was .33 ($p<.05$), indicating that 33% of the variance in self-esteem was explained by the independent variable. Both cell phone conversation quality ($\beta=.47$, $p<.05$) and the interaction between cell phone conversation quality and caring relationship ($\beta=-.20$, $p<.05$) were statistically significant predictors of self-esteem.

Social Competence. Two regression analyses were run. The independent variables were the cell phone discussion scale, the caring relationship scale, and the cell phone conversation quality scale. The dependent variable was social competence. Results of the regression are outlined in Tables 8 and 10. Specifically, the first omnibus F-test of the regression between cell phone discussion and the caring relationship scale indicated that the model accounted for a statistically significant amount of the variance in social competence ($F(3,74)=8.29$, $p<.05$). The adjusted R^2 value for the model was .23 ($p<.05$), indicating that 23% of the variance in social competence was explained by the independent variable. The interaction between caring relationship and cell phone discussion scales was the only statistically significant predictor of social competence ($\beta=-.36$, $p<.05$).

The second omnibus F-test of the regression between cell phone conversation quality and caring relationship scales indicated that the model accounted for a statistically significant amount of variance in social competence ($F(3,77)=5.78$, $p<.05$). The adjusted R^2 value for the model was

.16 ($p < .05$), indicating that 16% of the variance in social competence was explained by the independent variable. The cell phone conversation quality scale was the only statistically significant predictor of social competence ($\beta = .27$, $p < .05$).

Chapter 5: Discussion

This study aimed to examine relationships between adolescents and caring adults, as well as explore the role mobile technology plays in the relationship. Three main research questions guided the study:

1. How are cell phones currently used by adolescents?
2. How are adolescents interacting with caring, specifically through the use of mobile technology?
3. Is there a relationship among adolescents' mobile technology usage with caring adults and the outcome variables such as self-esteem and social competence?

The following examines findings related to these three areas of inquiry.

Adolescent Cell Phone Usage

Results indicated that the majority of adolescents had an unlimited plan for their cell phone which was paid for by their parents. The most common response for how they used their cell phones was to send or receive text messages. A majority of participants responded that they “always” use text messaging and tend to use it to “chat/say hello”. Participants also stated that they tended to use text messaging to “exchange information privately” and “discuss important personal matters”. Very few reported that they used text messaging to discuss school related topics.

Similar to previous research (Lenhart et al., 2010), adolescents in this study reported frequently using text messaging. Another similar finding was that adolescents reported using text messaging to exchange information privately (Lenhart et al., 2010). Text messaging appears to

be a common way for adolescents to communicate with peers, family, and caring adults in their lives. Since adolescents frequently report using text messaging, it appears to be a viable option for increasing communication between adolescents and caring adults. Formal mentoring programs, as well as informal ones, may chose to implement a mobile technology piece to their program to allow for further relationship development between adolescents and their mentors.

Relationship with Caring Adult and Mobile Technology

The majority of participants had relationships with caring adults. Similar to general text message use, these adolescents reported frequently going to caring adults “just to chat/say hello”. Seeking advice or assistance to solve a problem also were common topics adolescents reported discussing with caring adults.

Almost all participants stated that they had a caring adult’s phone number. Text messaging was the most common way that adolescents used technology to communicate with caring adults. A large percentage also reported that they made phone calls to caring adults. While a large number of participants stated that they have the caring adult’s email and are their “friends” on Facebook, they did not tend to communicate with the adult using those types of technology. Adolescents reported that they were most likely to use text messaging to discuss “friends”, “family members”, “dating/relationships”, and “afterschool activities”. There was a wide distribution of responses on the 12-items of topics discussed using text messaging, showing that adolescents tend to talk to caring adults about a large array topics.

In addition, the study found that the majority of participants used text messaging to communicate with caring adults. Participants also reported they were likely to discuss a wide range of topics with caring adults using text messaging. It appears that the adolescents in this

study feel comfortable communicating with caring adults using technology and using it to discuss a wide range of topics. The results suggest that adolescents willingly choose to use mobile technology to communicate with caring adults and these communications may serve to further strengthen their relationship.

Relationship Among Technology Use and Outcome Variables

Self-Esteem. Statistically significant relationships were found between the caring relationship scale, conversation quality scale, and the interaction between the caring relationship scale and conversation quality scale with self-esteem. The results indicate that although the number of topics discussed (cell phone discussion scale) does not predict self-esteem in the sample of adolescents, the quality of their conversations and likelihood to go to caring adults for assistance, are related to self-esteem.

Social Competence. Statistically significant relationships were found among conversation quality and the interaction between caring relationship scale and the cell phone discussion scale with social competence. Similar to the results for self-esteem, quality of the conversations between adolescents and caring adults was related to social competence. The results describing the statistically significant interaction indicate that although the number of topics discussed is not independently related to social competence, it may contribute to how likely adolescents are to go to caring adults for assistance (caring relationship scale) and improve the overall quality of their relationship.

The correlational and regression analyses indicate that the measures of relationship between adolescents and caring adults appear to positively relate to scores on self-esteem and social competence. These findings indicate that the quality of the conversations that adolescents

have with caring adults, as well as the strength of the relationship are positively related to adolescent scores of self-esteem and social competence. The results demonstrate that cell phones are a common form of technology that adolescents use to communicate with caring adults. While the difference between adolescents who use mobile technology with caring adults and those who do not, the use of a cell phone appears to serve as an additional form of communication and means to strengthen the relationships between adolescents and caring adults.

The results of this study are consistent with literature indicating that adult mentors serve as a protective factor and help to increase self-esteem and social competence (Anderson-Butcher & Cash, 2010; Anderson-Butcher et al., 2004; Eccles & Gootman, 2002; Raggins & Collins, 1999; Rhodes et al., 2006). A large majority of participants reported that they have a caring adult in their life who they communicate with using a cell phone, indicating that mobile technology is an additional way in which adolescents to communicate and strengthen relationships. Cell phones allow for instant communication appear to be the most utilized technology tool for adolescents in this study to communicate with caring adults. The results indicate that although the number of topics discussed (cell phone discussion scale) does not independently predict self-esteem or social competence, it may serve as a moderating variable by increasing the likelihood that the adolescent will go to a caring adult for assistance.

Limitations

There are several limitations to this study. This study utilized a cross-sectional non-probability sampling which limits the findings from being representative of the general population. Also, only relationships (not predictability) can be determined. There also was a small sample size. In addition, the vast majority of participants identified themselves as

Caucasian, indicating that minority populations were underrepresented. The study also had a very small sample size, limiting the ability to draw accurate conclusions when interpreting the data in relation to the general population. In addition, different operational definitions for relationship strength could be used which may alter the results. Finally, there were an insufficient number of participants to analyze the difference between adolescents who use mobile technology to communicate with a caring adult and those who do not. Further research can expand knowledge in this area by addressing limitation present in this study.

Future Research

Future research should continue to examine mobile technology use between adolescents and caring adults, as well as explore the impact technology usage has on strengthening these relationships. Future studies may choose to use different operational definitions for relationship strength to ensure that the definition is an accurate representation of the actual strength of the relationship. Studies may utilize a larger sample size which would allow for adolescents who have relationships with caring adults to be compared on different outcome variables to adolescents who do not have relationships with caring adults. This study identified a positive correlation between relationship strength and outcome variables, pointing to cell phone discussion as a possible moderating variable. It would be necessary for future research to determine if cell phone discussion with caring adults in fact leads to stronger relationships between adolescents and adults, which in turn, lead to better PYD outcome variables.

Implications for Social Work Professionals

This study's findings hold implications for social work professionals who work with adolescents, specifically those working with youth who may be at risk for problem behaviors.

Given that previous research has demonstrated that relationships with caring adults serve as a protective factor (Anderson-Butcher & Cash, 2010; Anderson-Butcher et al., 2004; Rhodes, et al., 2006), social workers may encourage adolescents to join mentoring programs or sports teams which would allow for the development of relationships with positive caring adults. Social workers may choose to advocate for additional research regarding PYD, relational cultural theory, and mobile technology to more fully understand the impact that mobile technology plays in relationships among adolescents and caring adults.

There also are implications for social workers who are employed in schools. School social workers might advocate for the creation of mentoring programs to allow students who are at risk to develop relationships with positive caring adults. The creation of these programs would support PYD and relational-cultural theory by allowing for the development of significant positive relationships between an adolescent and a caring adult. Social work professionals who do program development for mentoring programs could also integrate mobile technology usage into their programs. Including mobile technology use would allow for adolescents or caring adults to continue to develop relationships outside of activities created by the mentoring program. This would allow for mentoring relationships to continue even when adolescent and adult are unable to meet face-to-face because of scheduling conflicts. Adolescents would have an additional resource to utilize if they were in need of advice or assistance by having the ability to contact caring adults using mobile technology outside of designated meeting times.

Conclusion

Mobile technology allows adolescents and caring adults to communicate even if they are unable to meet face-to-face. This study acknowledges that relationships with caring adults serve

as a protective factor for young adults and mobile technology may contribute to the overall strength and benefits of the relationship. Overall, this study emphasizes the need for future research into the use of mobile technology in relationships with caring adults. This will allow researchers to understand the specific benefits to adolescents who use mobile technology to communicate with caring adults. An improved understanding of how mobile technology communication specifically contributes to relationship strength and different outcome variables would allow for mentoring and other PYD programs to be improved and adjusted.

References

- Anderson-Butcher, D. D., & Cash, S. J. (2010). Participation in Boy & Girls Clubs, vulnerability, and problem behaviors. *Children and Youth Services Review*, 32(5), 672-678.
- Anderson-Butcher, D., Cash, S.J., Saltzburg, S., Midle, T., & Pace, D. (2004). Institutions of youth development: The significance of supportive staff-youth relationships. *Journal of Human Behavior in the Social Environment*, 9(1/2), 83-99.
- Anderson-Butcher, D., Iachini, A., & Amorose, A. (2008). Initial reliability and validity of the Perceived Social Competence Scale. *Research on Social Work Practice*, 18(1), 47-54.
- Barron-McKeageny, T., Woody, J.D., & D'Souza, H.J. (2001). Mentoring at-risk Latino children and their parents: impact on social skills and problem behaviors. *Child and Adolescent Social Work Journal*, 18(2), 119-136.
- Bleechman, E.A., (1992). Mentors for high-risk minority youth: from effective communication to bicultural competence. *Journal of Clinical Child Psychology*, 21(2), 160-169.
- Brown, M.S. (2009). "I have a preschool buddy". Exploring the role of high school students in facilitating pre-academic skills and social development of preschool children. *Early Childhood Education*, 32(4), 221-227.
- Burt, M. R., Resnick, G., & Novick, E. R. (1998). *Building supportive communities for at-risk adolescents: It takes more than this*. Washington, DC: American Psychological Association.

- CDC. (2009). *National youth behavior risk survey* . Retrieved from:
http://www.cdc.gov/HealthyYouth/yrbs/pdf/us_overview_yrbs.pdf
- Devitt, K., & Roker, D. (2009). The Role of Mobile Phones in Family Communication. *Children & Society*, 23(3), 189-202.
- Dickerson, A.D., & Crase, S.J. (2005). Parent-adolescent relationships: The influence of multi-family therapy group on communication and closeness. *The American Journal of Family Therapy*, 33(1), 45-59.
- DuBois, D.L., & Neville, H.A. (1997). Youth mentoring: Investigation of relationship characteristics and perceived benefits. *Journal of Community Psychology*, 25(3), 227-234.
- Eccles, & Gootman (2002). *Community programs to promote youth development*. Washington DC: National Academy Press.
- Engle, P.L., Castle, S., & Menon, P. (1996). Child development: Vulnerability and resilience. *Social Science and Medicine*, 43(5), 621-635.
- Fraser, M.W., Richman, J.M., & Galinsky, M.J. (1999). Risk, protection, and resilience: Toward a conceptual framework for social work practice. *Social Work Research*, 23(3), 131-143.
- Georgiou, S.N., Demetriou, A.P., & Stavrinides, P. (2008). Attachment style and mentoring relationships in adolescence. *Educational Psychology*, 28(6), 603-614.
- Hurd, N. M., Zimmerman, M. A., & Xue, Y. (2009). Negative adult influences and the protective effects of role models: A study with urban adolescents. *Journal of Youth and Adolescence*, 38(6), 777-789.

- Karcher, M.J. (2005). The effects of developmental mentoring and high school mentors' attendance on their younger mentees' self-esteem, social skills, and connectedness. *Psychology in the Schools*, 41(1), 65-77.
- Lenhart, A., Ling, R., Cambell, S., & Purcell, K. (2010, April 20). *Teens and mobile phones*. Retrieved from Pew Research Center website:
<http://pewinternet.org/Reports/2010/Teens-and-Mobile-Phones.aspx>
- Lewin-Bizan, S., Bowers, E.F., & Lerner, R.M. (2010). One good thing leads to another: Cascades of positive youth development among American adolescents. *Development and Psychopathology*, 22(4), 759-770.
- Liang, B., Tracy, A.J., Kenny, M.E., Brogan, D., Gatha, R. (2010). The relational health indices for youth: An examination of reliability and validity aspects. *Measurement and Evaluation in Counseling and Development*, 42(4), 255-274.
- Munson, M.R., Smalling, S.E., Spencer, R., Scott, L.D., Tracy, E.M. (2010). A steady presence in the midst of change: non-kin natural mentors in the lives of older youth exiting foster care. *Children and Youth Services Review*, 32(4), 527-535.
- National Research Council (2002). *Community programs to promote youth development*. Washington, DC: National Academy Press.
- Ragins, B.R. & Cotton, J.L. (1999). Mentoring functions and outcomes: A comparison of men and women in formal and informal mentoring relationships. *Journal of Applied Psychology*, 84(4), 529-550.

- Ran, W. & Lo, V.H. (2006). Staying connected while on the move. *New Media and Society*, 8(1), 53-72.
- Rhodes, J.E., Spencer, R., Keller, T.E., Liang, B., & Noam, G., (2006). A model for the influence of mentoring relationships on youth development. *Journal of Community Psychology*, 34(6), 691-707.
- Rosenberg, M. (1979). Conceiving the self. New York; Basic Books.
- Spencer, R., Jordan, J.V., & Sazama, J. (2004). Growth-promoting relationships between youth and adults: A focus group study. *Journal of Contemporary Social Services*, 85(3), 354-362.
- Taylor, A.S., LoSciuto, L, Fox, M., Hilbert, S.M., Sonkowsky, M. (1999). The mentoring factor: Evaluation of the Across Ages' intergenerational approach to drug abuse prevention. *Child and Youth Services*, 20(1/2), 77-99.
- U.S. Census Bureau (2000). *Total population by age, race, and Hispanic or Latino origin for the United States*. Retrieved from:
<http://www.census.gov/population/www/cen2000/briefs/phc-t9/tables/tab01.pdf>
- Werner, E. E. (1992). The children of Kauai: Resiliency and recovery in adolescence and adulthood. *Journal of Adolescent Health*, 13(4), 262–268.
- Williams, S., & Williams, L. (2005). Space invaders: the negotiation of teenage boundaries through the mobile phone. *Sociological Review*, 53(2), 314-331.

Table 1

Risky Behaviors as Reported in the Youth Risk Behavior Survey (2009)

Risky Behavior	Youth Engaging in Behavior
<u>Violence and Other Injuries</u>	
Carried weapon in past 30 days	17.5%
Engaged in at least 1 physical fight	31.5%
Bullied on school property	19.9%
Seriously considered suicide	13.8%
<u>Tobacco Use</u>	
Ever smoked	46.3%
Smoked 1 or more cigarettes in past 30 days	19.5%
<u>Alcohol and Other Drugs</u>	
At least 1 drink in past 30 days	41.8%
Used marijuana once or more	36.8%
Used other substance in past 30 days	19.1%
<u>Sexual Behavior</u>	
Ever had sexual intercourse	46.0%
Had sexual intercourse with 4 or more people	13.8%
<u>Physical Activity & Health</u>	
Watch television for 3 or more hours per day	32.8%
Did not participate in at least 60 minutes of physical activity on at least 1 day during the last week	23.1%
Went without eating for 24 hours or more to lose weight in last month	10.6%
Were considered obese	12.0%
Were considered overweight	15.8%

Table 2

Characteristics of Cell Phone Use

	Percentage of Usually/Always Responses	Mean	SD
Send/receive text messages	92.0	4.64	0.73
Take pictures	50.6	3.62	1.03
Send/receive pictures	62.1	3.80	1.04
Play music	44.8	3.18	1.47
Record a video	26.4	2.69	1.40
Send/receive a video	26.7	2.60	1.46
Access the internet	37.9	2.51	2.69

Table 3

Characteristics of Text Messaging

	Percentage of Usually/Always Responses	Mean	SD
Chat/say hello	67.8	3.90	1.08
Report location	40.0	2.99	1.12
Coordinate meeting with someone	45.9	3.22	1.24
Discuss school related information	17.2	2.20	1.12
Exchange information privately	43.7	3.07	1.41
Discuss important personal matters	43.6	3.09	1.31

Table 4

Relationship Strength Scale

General likelihood to go to caring adult for:	Percentage of Very Likely/Likely Responses	Mean	SD
Advice	55.2	3.64	1.09
School assistance	37.9	3.20	1.33
Help to solve a problem	52.8	3.58	1.09
Help to resolve a conflict	44.8	3.34	1.22
Just to chat/say hello	57.5	3.75	1.16

Table 5

Contact with Caring Adults using Mobile Technology

Contact with caring adult using:	Percentage of Usually/Always Responses	Mean	SD
Text	46.3	3.35	1.16
Phone call	44.7	3.24	1.28
Email	3.90	1.45	0.82
Facebook	29.2	2.51	1.53

Table 6

Cell Discussion Scale

Topics discussed on cell phone with caring adult:	Percentage of Often/Very Often Responses	Mean	SD
School	17.2	2.40	1.28
Sports	28.7	2.64	1.45
Dating/relationships	37.8	2.85	1.50
Friends	50.5	3.42	1.42
Family members	48.2	3.38	1.29
Arguments	18.4	2.38	1.27
Grades	16.1	2.13	1.29
Share news/updates	37.9	2.93	1.44
Plan meeting times	31.0	2.77	1.37
Discuss schedule	24.1	2.57	1.38
Discuss afterschool activities	36.8	2.90	1.49
Discuss rules/curfew	29.8	2.74	1.43

Table 7

Bivariate Correlations Among Variables

Variable	Self-Esteem	Social Skill	Cell Phone Conversation Quality	Cell Phone Discussion Topics	Caring Relationship Scale
Self-Esteem					
Social Skills	.539**				
Cell Phone Conversation Quality	.519**	.384**			
Cell Phone Discussion	.198	.229*	.499**		
Caring Relationship Scale	.379**	.344**	.610**	.379**	

Note: **p<.01; *p<.05

Table 8

Cell Phone Discussion Regression Analysis Predicting Social Skills

Predictor Variables	Regression Coefficients			
	B(SE B)	β	<i>t</i>	<i>p</i> <
Constant	19.89(2.07)	--	9.63	0.00
Cell phone discussion	0.74(0.53)	0.16	1.34	0.17
Caring relationship scale	0.88(0.56)	0.18	1.56	0.12
CPDxCRS	-1.60(0.45)	-0.36	-3.54	0.00

Note: CPD=Cell phone discussion; CRS=Caring relationship scale; overall regression results $F=8.78$, $p<.00$, adjusted $R^2=0.23$

Table 9

Cell Phone Discussion Regression Analysis Predicting Self Esteem

Predictor Variables	Regression Coefficients			
	B(SE B)	β	<i>t</i>	<i>p</i> <
Constant	28.18(3.58)	--	7.87	0.00
Cell phone discussion	0.59(0.94)	0.08	0.64	0.52
Relationship strength	2.53(0.98)	0.32	2.56	0.01
CPDxCRS	-1.02(0.78)	-0.15	-1.31	0.19

Note: CPD=Cell phone discussion; CRS=Caring relationship scale; overall regression results $F=4.71$, $p<.01$, adjusted $R^2=0.14$

Table 10

Conversation Quality Regression Analysis Predicting Social Skills

Predictor Variables	Regression Coefficients			
	B(SE B)	β	<i>t</i>	<i>p</i> <
Constant	17.73(2.06)	--	8.60	0.00
Cell phone conversation quality	1.23(0.60)	0.27	2.05	0.04
Relationship strength	0.85(0.65)	0.17	1.31	0.19
CPCQxCRS	-0.34(0.39)	-0.09	-0.87	0.39

Note: CPCQ=Cell phone conversation quality scale; CRS=Caring relationship scale; overall regression results $F=5.78$, $p<.00$, adjusted $R^2=0.16$.

Table 11

Conversation Quality Regression Analysis Predicting Self Esteem

Predictor Variables	Regression Coefficients			
	B(SE B)	β	<i>t</i>	<i>p</i> <
Constant	26.10(3.00)	--	8.69	0.00
Cell phone conversation quality	3.48(0.91)	0.47	3.84	0.00
Caring relationship scale	0.44(0.95)	0.06	0.46	0.65
CPCQxRS	-1.14(0.56)	-0.20	-2.05	0.04

Note: CPCQ=Cell phone conversation quality scale; CRS=Caring relationship scale; overall regression results $F=12.97$, $p<.00$, adjusted $R^2=0.33$